

**ABSTRACT**

[1129] Techniques to allocate the total transmit power to the transmission channels in a multi-channel communication system such that higher overall system spectral efficiency and/or other benefits may be achieved. The total transmit power may be initially allocated to the transmission channels based on a particular power allocation scheme (e.g., the water-filling scheme). The initial allocation may result in more power being allocated to some transmission channels than needed to achieve the required SNR (e.g., the SNR needed to achieve the maximum allowed data rate), which would then result in these transmission channels being operated in the saturation region. In such situations, the techniques reallocate the excess transmit power of transmission channels operated in the saturation region to other transmission channels operated below the saturation region. In this way, higher data rate may be achieved for the "poorer" transmission channels without sacrificing the performance of the "better" transmission channels.